

AMENDMENTS TO THE CLAIMS

Please amend Claims 18-46 as follows.

LISTING OF CLAIMS

1.-17. (cancelled)

18. (currently amended) A manufacturing managing method comprising, ~~as a basic managing pattern,~~ the steps of:

designating a plurality of manufacturing lots and a plurality of specific manufacturing lots, each manufacturing lot and each specific manufacturing lot containing at least one workpiece as a main objective to be managed or more workpieces, the one or more workpieces of each manufacturing lot requiring one or more in-process work steps executed at respective predetermined work conditions, the in-process work steps or the predetermined work conditions for each workpiece of each manufacturing lot differing from those for each workpiece of the other manufacturing lots, each workpiece of the specific manufacturing lots requiring a specific in-process work step, a work condition of the specific in-process work step for the one or more workpieces of one specific manufacturing lot differing from those of the specific in-process work step for the one or more workpieces of the other specific manufacturing lots;

initially loading the one or more workpieces of each manufacturing lot on one or more carriers so as to load the one or more workpieces of only one manufacturing lot on each of the carriers, a maximum number of workpieces allowed to be loaded on each carrier being a predetermined number;

~~loading a specified number of different type manufacturing lots on a carrier, said different type manufacturing lots containing workpieces having different work conditions; and~~

mix-loading all or a part of the one or more workpieces of the specific manufacturing lots on a specific carrier selected from the carriers just before transporting the one or more workpieces of the specific manufacturing lots to a processing apparatus that is capable of simultaneously bringing a plurality of workpiece into the specific in-process work step of different work conditions, a number of workpieces of the specific manufacturing lots mix-loaded on the specific carrier being the predetermined number or less; and

transporting said specific carrier to ~~[[an]]~~ the processing apparatus that is capable of simultaneously bringing the workpieces into in-process work steps of different conditions, so as to cause said workpieces contained in respective different type manufacturing lots to pass along a plurality of manufacturing process flows to process the one or more workpieces of the specific manufacturing lots mix-loaded on the specific carrier in the specific in-process work step of a current manufacturing process flow at different work conditions.

19. (currently amended) The manufacturing managing method in accordance with claim 18, further comprising a step of making a judgment before starting the specific in-process work step in said processing apparatus as to whether or not said one or more workpieces contained in said ~~plurality of~~ specific manufacturing lots should be loaded on said specific carrier.

20. (currently amended) The manufacturing managing method in accordance with claim 19, further comprising a step of further ~~loading~~ mix-loading at least one workpiece of at least one ~~additional~~ specific manufacturing lot on the specific carrier under a condition that the ~~at least one workpiece~~ one or more workpieces contained in a ~~respective~~ the specific manufacturing lots ~~[[are]]~~ have already been loaded on the specific carrier before said specific carrier is transported to ~~[[an]]~~ the processing apparatus that has the capability of processing an increased number of workpieces.

21. (currently amended) The manufacturing managing method in accordance with claim 18, further comprising a step of making a judgment after finishing the specific in-process work step in said processing apparatus as to whether or not the ~~at least one workpiece~~ one or more workpieces of ~~a specified number of~~ one specific manufacturing ~~[[lots]]~~ lot should be unloaded from said specific carrier under a condition that the ~~at least one workpiece~~ one or more workpieces contained in ~~respective~~ the specific manufacturing lots are loaded on said specific carrier.

22. (currently amended) The manufacturing managing method in accordance with claim 21, further comprising a step of unloading the ~~at least one workpiece~~ one or more workpieces of ~~[[a]]~~ the specific manufacturing lot from said specific carrier ~~beforehand~~ before the specific carrier is transported to a second processing apparatus ~~when said specific manufacturing lot cannot be processed together with other lots in a subsequent manufacturing process flow,~~ a second specific in-process work step being

executed in the second processing apparatus and not being required for the one or more workpieces of the specific manufacturing lot.

23. (currently amended) The manufacturing managing method in accordance with claim 18, further comprising a step of

~~unloading the at least one workpiece~~ one or more workpieces of at least one specific manufacturing lot ~~under a condition that the at least one workpiece contained in respective manufacturing lots are already loaded on said carrier~~ from the specific carrier, a second specific in-process work step to be executed in a second processing apparatus in a subsequent manufacturing process flow not being required by the one or more workpieces of the one specific manufacturing lot and being required by the one or more workpieces of an other specific manufacturing lot; and a step of

~~loading required workpieces~~ at least one workpiece of other manufacturing lots a second specific manufacturing lot differing from the specific manufacturing lots on said specific carrier, thereby repacking the workpieces on the specific carrier before starting the second specific in-process work step in said second processing apparatus, the second specific in-process work step being required by the workpieces of the second specific manufacturing lot.

24. (currently amended) The manufacturing managing method in accordance with claim 18, further comprising: ~~a step of~~

after the step of mix-loading, ~~unloading part of the~~ at least one workpiece ~~[[in a]]~~ of one specific manufacturing lot from the specific carrier before starting the

specific in-process work step in said processing apparatus in such a manner that an original lot number of each unloaded workpiece can be identified later from a condition that the ~~at least one workpiece contained in respective manufacturing lots are loaded on~~ said carrier, and a step of

loading ~~other workpieces~~ at least one workpiece of at least one lot another specific manufacturing lot on said specific carrier.

25. (currently amended) The manufacturing managing method in accordance with claim 18, ~~further comprising a step of~~ wherein the step of mix-loading all or a part of one or more workpieces of the specific manufacturing lots includes:

temporarily stopping or decelerating said specific carrier at a mix-loading waiting point provided adjacent to said processing apparatus; and ~~a step of make~~ making a judgment as to whether or not the ~~at least one workpiece contained in respective lots~~ one or more workpieces of the specific manufacturing lots are loadable on said specific carrier.

26. (previously presented) The manufacturing managing method in accordance with claim 18, wherein said processing apparatus restricts the loading of at least one ~~workpiece~~ workpieces contained in a ~~specific manufacturing~~ plurality of manufacturing ~~[[lot]]~~ lots onto said specific carrier.

27. (currently amended) The manufacturing managing method in accordance with claim 18, wherein the loading of ~~at least one workpiece~~ workpieces contained in a

~~specific plurality of~~ manufacturing ~~[[lot]]~~ lots onto said specific carrier is restricted based on ~~at least either~~ one of a product name and a fundamental process flow.

28. (currently amended) The manufacturing managing method in accordance with claim 18, wherein the loading of ~~at least one workpiece~~ workpieces contained in a ~~specific plurality of~~ manufacturing ~~[[lot]]~~ lots onto said specific carrier is restricted based on a carrier type.

29. (currently amended) The manufacturing managing method in accordance with claim 24, wherein ~~a second specific manufacturing lot~~ one of the specific manufacturing lots is continuously loaded on ~~[[a]]~~ the specific carrier when unloading of said ~~[[first]]~~ specific manufacturing lot is prohibited beforehand.

30. (currently amended) A manufacturing managing method comprising, ~~as a basic managing pattern,~~ the steps of:

providing a plurality of manufacturing lots, each manufacturing lot containing one or more workpieces, the one or more workpieces of each manufacturing lot requiring one or more in-process work steps, the in-process work steps required for the one or more workpieces of each manufacturing lot differing from those required for the one or more workpieces of the other manufacturing lots;

designating each ~~manufacturing lot~~ of the plurality of manufacturing lots; ~~containing at least one workpiece as a main objective to be managed;~~ and

providing a plurality of processing apparatuses, each of the processing apparatuses executing a specific in-process work step;

initially loading the one or more workpieces of each manufacturing lot on one or more carriers so as to load the one or more workpieces of only one manufacturing lot on each of the carriers, a maximum number of workpieces allowed to be loaded on each carrier being a predetermined number

when the execution of the specific in-process work step in each of the processing apparatuses is intended to execute the specific in-process work steps in the processing apparatuses, selecting a plurality of specific manufacturing lots containing the one or more workpieces, which require the specific in-process work step of the processing apparatus, from the manufacturing lots;

loading mix-loading the one or more workpieces of the specific a-specified number of manufacturing lots loaded on the carriers on a specific carrier selected from the carriers so as to cause said at least one workpiece contained in respective manufacturing lots to pass along a plurality of manufacturing process flows each time the specific manufacturing lots are selected; and

transporting the specific carrier having the one or more workpieces of the specific manufacturing lots requiring the specific in-process work step of the processing apparatuses to the processing apparatus to execute the specific in-process work step for the workpieces of the specific manufacturing lots, all in-process work steps required by the one or more workpieces of each manufacturing lot being executed in the processing apparatuses.

31. (currently amended) The manufacturing managing method in accordance with claim 30, wherein the ~~at least one workpiece~~ one or more workpieces contained in respective of the specific manufacturing lots and ~~once~~ loaded on said specific carrier are managed as a lot group.

32. (currently amended) The manufacturing managing method in accordance with claim 30, wherein a loading of workpieces onto said specific carrier by using a [[new]] manufacturing lot different from the specific manufacturing lots is prohibited.

33. (currently amended) The manufacturing managing method in accordance with claim 30, wherein a loading of workpieces contained in other manufacturing lots is prohibited when [[a]] one of the specific manufacturing [[lot]] lots to be processed is urgently [[is]] loaded on said specific carrier.

34. (currently amended) The manufacturing managing method in accordance with claim 30, wherein

in a case that a first system using a one-to-one relationship for managing [[the]] a first carrier and [[the]] one manufacturing lot coexists with a second system using a [[1-to-n]] 1-to-N ([[n]] N is an integer not smaller than 1) relationship for managing [[the]] a second carrier and [[the]] N manufacturing [[lot]] lots,

said manufacturing method applied to said second system comprises:

selecting a representative manufacturing lot from the N manufacturing
lots;

assuming N-1 virtual carriers corresponding to the other N-1 manufacturing lots;

~~a step of~~ assigning an original carrier number and an original lot number in said first system to the ~~[[one]]~~ first carrier and ~~[[its]]~~ the representative lot ~~in said first system~~ and ~~[[also]]~~

assigning ~~[[a]]~~ pseudo carrier number numbers and ~~a pseudo original lot number numbers~~ in said first system to ~~other carrier~~ the N-1 virtual carriers and ~~its lot~~ the corresponding N-1 manufacturing lots, respectively, thereby realizing a dummy one-to-one management applied to the carrier and the N manufacturing ~~[[lot]]~~ lots.

35. (currently amended) A manufacturing managing method comprising, ~~as a basic managing pattern,~~ the steps of:

providing a plurality of manufacturing lots including a plurality of similar manufacturing lots, each manufacturing lot and each similar manufacturing lot containing one or more workpieces, the one or more workpieces of each manufacturing lot requiring one or more in-process work steps executed at respective work conditions, the in-process work steps or the work conditions for each workpiece of each manufacturing lot differing from those for each workpiece of the other manufacturing lots, the one or more workpieces of the similar manufacturing lots requiring at least one of the work steps executed at the same work condition, the one or more workpieces of the similar manufacturing lots requiring a specific in-process work step executed at the same work condition;

designating each manufacturing lot of the plurality of manufacturing lots containing ~~at least one workpiece as a main objective to be managed;~~

initially loading the one or more workpieces of each manufacturing lot on one or more carriers so as to load the one or more workpieces of only one manufacturing lot on each of the carriers, a maximum number of workpieces allowed to be loaded on each carrier being a predetermined number;

~~loading a specified number of same type manufacturing lots on a carrier, said same type manufacturing lots containing workpieces having the same work conditions in at least one work step; and~~

mix-loading all or a part of the one or more workpieces of the similar manufacturing lots on a specific carrier selected from the carriers just before transporting the one or more workpieces of the similar manufacturing lots to a processing apparatus that is capable of processing a plurality of workpieces in the specific in-process work step at the same work condition, the number of workpieces of the similar manufacturing lots mix-loaded on the specific carrier being the predetermined number or less; and

transporting said specific carrier to ~~a first~~ the processing apparatus that ~~performs batch processing or machining operation applied to said workpieces or to a second apparatus that brings said workpieces into an in-process work step under the same conditions, so as to cause said workpieces contained in respective same type manufacturing lots to pass along a plurality of manufacturing process flows to process~~ the workpieces of the similar manufacturing lots mix-loaded on the specific carrier in the

specific in-process work step of a current manufacturing process flow at the same work condition.

36. (currently amended) The manufacturing managing method in accordance with claim 35, further comprising a step of making a judgment before starting the specific in-process work step in said first or second processing apparatus as to whether or not said ~~at least one workpiece~~ one or more workpieces contained in said ~~plurality of similar~~ manufacturing lots should be loaded on said specific carrier.

37. (currently amended) The manufacturing managing method in accordance with claim 36, further comprising a step of further ~~loading~~ mix-loading additional workpieces at least one workpiece of at least one similar manufacturing lot on the specific carrier under a condition that the one or more workpieces contained in ~~respective~~ the similar manufacturing lots ~~[[are]]~~ have already been loaded on the specific carrier before said specific carrier is transported to ~~[[an]]~~ the processing apparatus that has the capability of processing an increased number of workpieces.

38. (currently amended) The manufacturing managing method in accordance with claim 35, further comprising a step of making a judgment after finishing the ~~operation in said first or second apparatus~~ specific in-process work step in said processing apparatus as to whether or not the one or more workpieces of a ~~predetermined number of one similar~~ manufacturing ~~[[lots]]~~ lot should be unloaded from said specific carrier under a condition that the ~~at least one workpiece~~ one or more

workpieces contained in ~~respective~~ the similar manufacturing lots are loaded on said specific carrier.

39. (currently amended) The manufacturing managing method in accordance with claim 38, further comprising a step of unloading the ~~at least one workpiece~~ one or more workpieces of ~~[[a]]~~ the similar specific manufacturing lot from said specific carrier beforehand before the specific carrier is transported to a second processing apparatus when said specific manufacturing lot cannot be processed together with other lots in a subsequent manufacturing process flow, a second specific in-process work step being executed in the second processing apparatus and not being required for the one or more workpieces of the similar manufacturing lot.

40. (currently amended) The manufacturing managing method in accordance with claim 35, further comprising a step of

unloading the ~~at least one workpiece~~ one or more workpieces of at least one similar specific manufacturing lot from the specific carrier, a second specific in-process work step to be executed in a second processing apparatus in a subsequent manufacturing process flow not being required by the one or more workpieces of the one similar manufacturing lot and being required by the one or more workpieces of an other similar manufacturing lot; under a condition that the at least one workpiece contained in respective manufacturing lots are already loaded on said carrier and a step of

loading ~~required workpieces~~ at least one workpiece of ~~other lots~~ a specific manufacturing lot differing from the similar manufacturing lots on said specific carrier, thereby repacking the workpieces on the specific carrier before starting the operation ~~second specific in-process work step~~ in said ~~first or second~~ second processing apparatus, the second specific in-process work step being required by the one or more workpieces of the specific manufacturing lot.

41. (currently amended) The manufacturing managing method in accordance with claim 35, further comprising: ~~a step of~~

after the step of mix-loading, unloading part of the at least one workpiece ~~[[in a]] of one similar specific manufacturing lot from the specific carrier~~ before starting the operation specific in-process work step in said ~~first or second~~ processing apparatus in such a manner that an original lot number of each unloaded workpiece can be identified later ~~from a condition that the at least one workpiece contained in respective manufacturing lots are loaded on said carrier, and a step of~~

loading ~~other workpieces~~ at least one workpiece of ~~at least one lot~~ another similar manufacturing lot on said specific carrier.

42. (currently amended) The manufacturing managing method in accordance with claim 41, wherein one of the similar manufacturing lots ~~a specific manufacturing lot~~ is continuously loaded on the ~~[[same]]~~ specific carrier when unloading of said ~~specific similar~~ manufacturing lot is prohibited beforehand.

43. (currently amended) The manufacturing managing method in accordance with claim 35, wherein the step of mix-loading all or a part of workpieces of the similar manufacturing lots further comprising includes: a step of

temporarily stopping or decelerating said specific carrier at a mix-loading waiting point provided adjacent to said ~~first or second~~ processing apparatus; and a step of make

making a judgment as to whether or not the ~~at least one workpiece contained in respective manufacturing lots~~ one or more workpieces of the similar manufacturing lots are loadable on said specific carrier.

44. (currently amended) The manufacturing managing method in accordance with claim 35, wherein said ~~first or second~~ processing apparatus restricts the loading of the at least one workpiece contained in a ~~specific~~ one of the similar manufacturing ~~[[lot]]~~ lots onto said specific carrier.

45. (currently amended) The manufacturing managing method in accordance with claim 35, wherein the loading of the at least one workpiece contained in ~~[[a]]~~ one of the similar ~~specific~~ manufacturing ~~[[lot]]~~ lots onto said specific carrier is restricted based on ~~at least either~~ one of a product name and a fundamental process flow.

46. (currently amended) The manufacturing managing method in accordance with claim 35, wherein the loading of the at least one workpiece contained in ~~[[a]]~~ one of

the similar ~~specific~~ manufacturing ~~[[lot]]~~ lots onto said specific carrier is restricted based on a carrier type.